

THE WEATHER OF THE MONTH.

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PRESSURE AND WINDS.

The distribution of the mean atmospheric pressure for November, 1908, over the United States and Canada, is graphically shown on Chart VI, and the average values and departures from the normal are shown for each station in Tables I and III.

The general distribution of the mean pressure partook of that normal for the season, except that high pressure was unusually persistent over the northern portions of the Rocky Mountain, Plateau, and Pacific coast districts. Storm development was therefore confined mainly to the outer limits of the above area, and an unusual number of low-pressure areas had their origin over the southern slope and mountain districts and in the Canadian Northwest.

The eastward progress of the low areas was largely at variance with the course usually pursued, those from the Northwest Provinces instead of curving southward into the Missouri Valley, moved almost due east to the Lake Superior district and thence easterly north of the lower Lakes. Those from the southwest, instead of pursuing their usual course over the middle Mississippi Valley to the lower Lakes, moved in paths far north of the above course and likewise centered in the region north of Lake Superior. The result was a decided diminution of pressure over the Lake region and thence eastward over the St. Lawrence Valley.

Over large portions of the Appalachian Mountain region, the Ohio Valley and Gulf States, and from the upper Missouri Valley westward and southwestward to the Pacific coast the month was remarkably free from storm activity.

The mean pressure was above the normal by rather large amounts over the entire Rocky Mountain and Plateau districts, and by small amounts over the Gulf and South Atlantic States, and decidedly below the normal over the Lake region and thence easterly over the St. Lawrence Valley, New England, and the Canadian Maritime Provinces.

The diminution of pressure over the northern districts gave a decided southerly trend to the prevailing winds from the Mississippi Valley eastward, and over the southern portion of the Great Plains region. Over the upper Mississippi and Missouri valleys the winds were generally from the northwest.

TEMPERATURE.

The mean temperature during November, 1908, was above the normal over all districts, except the southern portions of the Rocky Mountain and Plateau regions, where a slight deficiency existed, as in the preceding month. Over the great central valleys and the Northwest the temperature for the month averaged from 3° to 6° above the normal, and in portions of the upper Missouri Valley and Canadian Northwest Provinces the excess averaged from 7° to 10°.

The comparatively cool weather prevailing at the beginning of the first decade over the more eastern portions of the United States continued until about the 5th, at which time minimum temperatures were unusually low for the period of the year, especially over the Ohio Valley and portions of the Middle Atlantic and New England States. After the 5th the temperature gradually rose, and the mean for the decade was above the normal over all districts, except from the lower Lakes eastward over New England, the excess ranging from 3° to 6° over most of the region from the Mississippi River westward.

Maximum temperatures during this decade were unusually high over the Pacific coast States, and over the Gulf States they were generally above 80°. Minimum temperatures from 10° to 20° occurred over the upper Missouri Valley, and freezing weather extended to the northern portions of the Gulf States.

With the beginning of the second decade an area of decided cold advanced from the Northwest and by the 16th had overspread all districts east of the Rocky Mountains, the minimum temperatures on the 13th being below zero in portions of the central Rocky Mountain region and unusually low along the Atlantic coast on the 16th. During this decade freezing temperatures occurred over all districts, except along the immediate south Atlantic and Gulf coasts and over the lower elevations of southern Arizona and the Pacific coast States.

On the 16th warmer weather set in over the Northwestern States and rapidly overspread all districts, and temperatures above the normal prevailed very generally during the remainder of the month, except over the upper Missouri Valley and adjacent district, where on the 30th a decided cold wave was being experienced.

High maximum temperatures prevailed during the latter part of the second decade over the Missouri Valley districts, and the mean temperature for that decade was generally above the normal over the last-named district and from thence westward over the northern Rocky Mountain and entire Plateau and Pacific coast districts. The mean temperature for the second decade was below the normal from the southern Rocky Mountain district northeastward and eastward to the Lake region and Atlantic coast. Maximum temperatures were unusually high during the third decade, especially over the Mississippi Valley region, where on several dates they were higher by several degrees than previously recorded in the last decade of November. The mean temperature for the third decade was unusually high from the Rocky Mountains eastward, the excess ranging from 5° to more than 15°.

PRECIPITATION.

Heavy rains prevailed over the east coast of Florida, where the monthly falls ranged from 2 to 9 inches. Amounts ranging from 2 to 4 inches were fairly general over large portions of the Ohio, Mississippi, and Missouri valleys and eastern portions of the Great Plains and along the Pacific coast from northern California to Washington. Over the greater part of the Gulf and Atlantic coast States, upper Ohio Valley, and lower Lake region the monthly fall was less than 2 inches, and at points along the immediate Gulf coast and over the northern portion of the Appalachian Mountain region, including portions of New York and New England, the fall was less than 1 inch. Over the western portions of the Great Plains and in the Rocky Mountain, Plateau, and south Pacific coast districts the monthly amounts were generally less than one-half inch.

Precipitation was below the normal from 1 inch to 3 inches over nearly all districts east of the Mississippi River, except over the southern portion of eastern Florida and at a few points in western Tennessee, and locally in Michigan, Illinois, and Wisconsin. There was a general deficiency from the Rocky Mountains westward to the Pacific, except in a few scattered localities, the deficiency ranging from nearly 2 inches to more than 4 inches along the north Pacific coast.

Precipitation was above the normal on the east coast of Florida, over portions of Missouri, Kansas, Arkansas, the eastern portion of the Dakotas, western Minnesota, locally in the central Rocky Mountain and Plateau districts and at a few points in Texas, southern California, and northwestern Washington.

The lack of general and heavy rains over the lower Lake region, portions of New England, New York, Pennsylvania, Ohio, and West Virginia has resulted in a still further reduction of the water supply, and much inconvenience has been experienced in maintaining supplies for cities, stock, industrial, and other purposes.

SNOWFALL.

The distribution of snowfall during the month is graphically shown on Chart VII, and the depth remaining unmelted on the ground at the end of the month is shown on Chart VIII.

In general some snow occurred over all portions of the United States, except along the south Atlantic coast, over the Gulf States, the greater part of Texas, and along the immediate Pacific coast.

Heavy snows for the season occurred over the Appalachian Mountain districts during the 13th and 14th, and there were unusually heavy falls during the latter part of the month on the eastern slopes of the Rocky Mountains from southern Wyoming to New Mexico, and over portions of the Great Plains region from Kansas northward to the Dakotas.

Snowfall was generally light over the mountain districts of California, Oregon, and Washington, and the amounts in the Plateau regions were small except in northern Utah, where in the vicinity of Salt Lake City the amount of fall was the greatest ever known.

At the end of the month the ground was bare of snow over all eastern districts.

In the Rocky Mountain region and over the upper Missouri Valley a large portion of the snowfall of the last few days of the month still remained on the ground, the depths ranging from 5 to 10 inches in portions of North Dakota and Minnesota, and from 10 to 20 inches on the eastern slopes of the Rocky Mountains in Colorado and northern New Mexico, at points in northern Utah and in the high Sierra of California.

HUMIDITY AND SUNSHINE.

Over the districts east of the Mississippi, except in the vicinity of Lake Michigan and over southern Florida, the relative humidity was below the normal, the deficiency ranging from 5 to 10 per cent over the Ohio Valley, lower Lake region, Middle Atlantic States, and southern New England. West of the Mississippi it was below the normal over Arkansas, Louisiana and central Texas, in the upper Missouri Valley, and the north Pacific coast.

The relative humidity was above the normal over the greater part of the Rocky Mountain and Plateau districts, in portions of the middle Missouri Valley and over the middle and south Pacific coasts.

There was a decided excess of cloudy weather over northern New England and portions of the Lake region, where the percentage of sunshine ranged from 30 to as low as 10 per cent of the possible.

The usual cloudy weather prevailed over the territory from western Montana to the Pacific coast and there was also much cloudy weather over portions of Oregon and northern California.

Over the south Atlantic coast and Florida Peninsula there was an abundance of sunshine, the amounts ranging from 60 to 70 per cent of the possible. There was also ample sunshine over most of the great agricultural districts from the Ohio Valley to the Great Plains and generally over the Rocky Mountain and Plateau districts, and the usual outdoor occupations were pursued with but few interruptions.

In Canada.—Director R. F. Stupart says:

The temperature was above the average in all parts of the Dominion, except in the eastern part of Nova Scotia and in Prince Edward Island, where the average was barely maintained. The positive departures were for the most part marked, varying from 6° to 9° over the greater portions of the Western Provinces and British Columbia, and from 2° to 5° in Ontario.

The precipitation was unusually heavy over the lower mainland of British Columbia. It was generally a little above the average in the more northern portions of Ontario as well as very locally in eastern Nova Scotia, but over the large remaining portion of the Dominion it was everywhere below the usual quantity and with few exceptions to a considerable amount. In the Maritime Provinces the negative depart-

ure was usually from 2 to nearly 3 inches. In Quebec and the southern portions of Ontario the deficiency was also very marked, while in the Western Provinces the precipitation varied from nil in parts of southern Alberta to a half or less of the usual quantity over the larger portions of Saskatchewan and Manitoba. In the upper mainland of British Columbia the precipitation was locally deficient.

At the close of the month snow lay on the ground in the northern portions of Alberta and Saskatchewan to a depth of from 6 to 8 inches, diminishing to little or none in the southern portions. In Manitoba there was a light covering in most localities, also in eastern Quebec and northern New Brunswick; elsewhere, except very locally, there was no snow.

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	12	40.7	+ 1.1	+ 9.9	+ 0.9
Middle Atlantic	16	45.3	+ 1.6	+ 4.9	+ 0.4
South Atlantic	10	57.1	+ 3.0	+ 9.0	+ 0.8
Florida Peninsula *	8	67.2	+ 0.7	+ 6.0	+ 0.5
East Gulf	11	59.6	+ 8.9	+ 10.9	+ 1.0
West Gulf	10	58.8	+ 2.9	+ 14.3	+ 1.3
Ohio Valley and Tennessee	13	48.1	+ 2.9	+ 15.1	+ 1.4
Lower Lake	10	41.2	+ 2.2	+ 22.5	+ 0.9
Upper Lake	12	37.7	+ 3.6	+ 23.4	+ 2.0
North Dakota *	9	31.2	+ 6.4	+ 26.3	+ 2.4
Upper Mississippi Valley	15	41.9	+ 4.1	+ 18.3	+ 1.7
Missouri Valley	12	41.7	+ 4.2	+ 24.0	+ 2.2
Northern Slope	9	34.5	+ 2.5	+ 12.1	+ 0.9
Middle Slope	6	43.0	- 1.2	+ 4.9	+ 1.1
Southern Slope *	7	50.3	0.0	- 8.2	+ 0.4
Southern Plateau *	12	47.8	- 0.6	- 7.3	- 0.7
Middle Plateau *	10	36.7	- 0.4	- 8.2	- 0.7
Northern Plateau *	12	31.4	+ 2.6	+ 7.2	+ 0.7
North Pacific	7	48.3	+ 3.2	+ 9.8	+ 0.1
Middle Pacific	8	53.9	+ 0.4	- 0.9	- 0.1
South Pacific	4	56.7	- 0.4	+ 3.8	+ 0.3

* Regular Weather Bureau and selected cooperative stations.

Average precipitation and departures from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		Inches.	Inches.
New England	12	1.04	29	- 2.5	- 7.7
Middle Atlantic	16	0.86	31	- 1.9	- 3.3
South Atlantic	10	1.57	58	- 1.4	+ 0.8
Florida Peninsula *	8	2.50	86	+ 0.4	- 1.1
East Gulf	11	1.90	63	- 2.2	- 4.2
West Gulf	10	3.05	81	- 0.7	+ 0.5
Ohio Valley and Tennessee	13	1.88	54	- 1.6	- 6.2
Lower Lake	10	1.90	45	- 1.6	- 4.2
Upper Lake	12	2.20	92	- 0.3	- 2.9
North Dakota *	9	1.16	153	+ 0.4	+ 1.1
Upper Mississippi Valley	15	1.79	86	- 0.3	- 1.1
Missouri Valley	12	2.14	178	+ 0.9	+ 4.8
Northern Slope	9	0.31	38	- 0.5	+ 3.5
Middle Slope	6	1.79	181	+ 0.8	+ 6.5
Southern Slope *	7	2.01	125	+ 0.4	+ 6.2
Southern Plateau *	12	0.37	55	- 0.3	- 0.2
Middle Plateau *	10	0.45	53	- 0.4	+ 1.1
Northern Plateau *	12	0.74	48	- 0.8	- 1.5
North Pacific	7	6.09	84	- 1.2	- 5.3
Middle Pacific	8	1.97	64	- 1.1	- 5.6
South Pacific	4	0.87	69	- 0.4	- 1.7

* Regular Weather Bureau and selected cooperative stations.

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	74	- 4	Missouri Valley	69	- 2
Middle Atlantic	73	- 2	Northern Slope	69	+ 2
South Atlantic	77	- 1	Middle Slope	65	+ 3
Florida Peninsula	81	+ 1	Southern Slope	60	- 2
East Gulf	75	- 1	Southern Plateau	47	+ 1
West Gulf	73	- 1	Middle Plateau	57	+ 1
Ohio Valley and Tennessee	68	- 5	Northern Plateau	68	- 5
Lower Lake	72	- 5	North Pacific	86	0
Upper Lake	80	0	Middle Pacific	- 74	+ 1
North Dakota	81	- 2	South Pacific	71	+ 4
Upper Mississippi Valley	72	- 2			

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Bismarck, N. Dak.	30	54	nw.	North Head, Wash.	16	66	se.
Block Island, R. I.	4	50	nw.	Do.	17	63	se.
Do.	5	54	nw.	Do.	19	85	se.
Do.	15	50	nw.	Do.	21	60	se.
Buffalo, N. Y.	14	56	w.	Pierre, S. Dak.	30	51	nw.
Do.	26	50	w.	Point Reyes Light, Cal.	23	73	n.
Do.	27	54	w.	Do.	24	58	n.
Do.	30	50	sw.	Do.	25	58	n.
Canton, N. Y.	26	51	w.	Seattle, Wash.	1	50	s.
Cleveland, Ohio.	30	54	s.	Sioux City, Iowa.	30	54	nw.
Detroit, Mich.	26	52	sw.	Southeast Farallon, Cal.	23	54	nw.
Do.	30	50	sw.	Tatoosh Island, Wash.	1	58	s.
Duluth, Minn.	24	54	ne.	Do.	2	60	s.
Do.	30	60	w.	Do.	3	60	s.
El Paso, Tex.	24	63	sw.	Do.	16	68	s.
Little Rock, Ark.	23	59	s.	Do.	19	74	s.
Mount Tamalpais, Cal.	22	56	nw.	Do.	23	51	sw.
Do.	24	58	nw.	Toledo, Ohio.	26	54	s.
North Head, Wash.	1	60	se.	Do.	30	50	sw.
Do.	2	60	se.	Williston, N. Dak.	30	52	nw.
Do.	3	61	se.				

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England.	6.2	+ 0.6	Missouri Valley.	4.8	- 0.1
Middle Atlantic.	5.1	- 0.1	Northern Slope.	4.6	0.0
South Atlantic.	3.9	- 0.6	Middle Slope.	4.1	+ 0.5
Florida Peninsula.	4.0	- 0.6	Southern Slope.	3.9	+ 0.7
East Gulf.	4.8	- 0.2	Southern Plateau.	3.3	+ 1.0
West Gulf.	4.6	0.0	Middle Plateau.	3.5	- 0.1
Ohio Valley and Tennessee.	4.9	- 0.8	Northern Plateau.	6.1	+ 0.1
Lower Lake.	7.0	- 0.2	North Pacific.	7.4	+ 0.6
Upper Lake.	6.9	- 0.1	Middle Pacific.	5.5	+ 1.7
North Dakota.	5.6	+ 0.3	South Pacific.	4.6	+ 1.7
Upper Mississippi Valley.	5.4	+ 0.1			